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The relation between real earnings management and managers error in earnings per share forecast

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Abstract

There are various researches on accruals-based earnings management. The earnings management can be done by accruals or real activities or both of them. A few studies are conducted on the survey of the relationship between earnings management via real activities and managers' error in earnings per share forecast. The present study aimed to answer the question "Is there any association between the criteria of earnings management based on real activities, abnormal cash flow from operations, abnormal production expenses and abnormal discretionary expenses with the managers' error in earnings per share forecast?" To do this, a sample of 96 companies in stock exchange market was selected and the data of 2005-2011 were extracted. The results of the study showed that real activities management to increase (reduce) the real earnings to achieve the forecast earnings leads to reduction (increase) of the abnormal cash flow from operations and abnormal discretionary expenses compared to the normal conditions. In addition, there was no significant relation between abnormal production expenses with the managers' error in earnings per share forecast.

Keywords: Real earnings management, Abnormal cash flows from operations, Abnormal product expenses, Abnormal discretionary expenses, Managers error in earnings per share forecast.

Introduction

With the growth of business and trading in the world and specialization of management of the companies, the management is separated from ownership and the companies now are managed by professional managers, aware of the complex economic and financial affairs. The owners give their wealth to the managers and to make decision in some cases as keeping or selling the investment and evaluation of the tasks of the managers to re-select or replace them, ask the managers to present the information and explain about his performance. Thus, accounting information meet the major parts of the demands or information of the decision makers.

Indeed, accounting is information system of business units presenting financial information. Most of accounting information is reflected in basic financial statements and most of the information needs of the decision makers including equity, potential investors, credit providers, financial analysts and other users are met by financial statements. One of the basic financial statements that are taken into attention is profit and loss report. This report presents the performance of business unit in a financial period. The researches in earnings management showed two main methods of earnings management. The managers of the companies can manage earnings via accruals manipulation and real activities manipulation. Most of earnings management literature emphasizes on accruals-based earnings management. However, a few studies are conducted on real earnings management and its effect on business unit performance. Real earnings management is with the change in timing or structuring of real activities of the company. Therefore, the researchers in the studies on real earnings management identified abnormal levels of business unit activities (e.g.Healy and Wahlen., 1999).

The researches on real earnings management such as Roychowdhury (2006) and Elshafie *et al.* (2010) indicated the real earnings management (Elshafie *et al.*, 2010). The present study aimed to evaluate the relationship between real earnings management and managers error in earnings per share forecast. The criteria of real earnings management were selected in accordance with Cohen & Zarowin (2010) study. The relationship between real earnings management criteria and managers error in earnings per share forecast was investigated via

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regression analysis. Later, the theoretical basics of the study, review of literature, model and study variables and the results of hypotheses test are explained.

Theoretical basics of the study

One of the goals of financial reporting is periodical summary of financial performance information of the companies. The beneficiaries of the company apply earnings (as the main aspect of financial statements and additional notes) to evaluate management supervision duty. The beneficiaries apply "earnings" values to measure management performance, determining reward price, future evaluation of the company (for the decisions of resources allocation) and company evaluation. The key role of earnings in reward contracts and evaluation of performance is an incentive for earnings management.

Many researches show that managers use their accounting power (estimation and selection of accounting) to manipulate accruals and finally earnings. Earnings besides accruals component has cash component. Earnings management is also possible via earnings cash component. Indeed, the researches on earnings management documented both earnings management based on accounting items (via accruals) and earnings management based on real activities (real activities manipulation in business). One of the definitions of earnings management is "a purposeful intervention in the external financial reporting process, with the aim of achieving some private benefits. Thus, earnings management can be occurred in each time of external disclosure processes with various forms. Minor extension of this definition would include earnings real management. This type of earnings management is accomplished via timing financing decisions and investment and to alter the reported earnings or some subsets of it (e.g. Schipper, 1989).

The main difference between discretionary accruals management and real activities manipulation is the scheduling of earnings management. Compared to earnings management based on accounting values, any manipulation in real activities should be occurred in a period of year. The real activities manipulation occurs when the managers forecast indicates that earnings failed to meet their required goals unless they lead to the affairs rising from the normal procedure of the company or when other factors (stringent accounting standards) restrict discretionary accruals managements. To fulfill the earnings goals, the managers can wait to the end of year and apply discretionary accruals for reported earnings management. This method compromises the risk that the earnings required for manipulation is greater than existing discretionary accruals, because the discretion in accruals is limited by generally accepted accounting principles (e.g. Chapman-Craig, 2011).

Similar to earnings management, there are two different approaches in relation to forecast earnings in theoretical literature of accounting as signaling approach and management opportunistic behavior Approach. In accordance with signaling approach, managers as the people mostly being aware of the current and future condition of the company, signal their information to the people outside the organization and they reduce information asymmetry. On the other hand, in accordance with opportunistic behavior approach, the managers' benefit from the asymmetry between themselves and people outside the organization and they try to transfer the benefits to themselves. Opportunistic behavior approach is based on agency theory and the contrast between the benefits of managers and investors. The most recognized outcome of management opportunistic behavior in relation to forecast earnings is investors' perception management or investors' expectation management and the managers manage the beliefs and expectations of the investors as it is good for them. One of the requirements of stock exchange is earnings forecast by managers. There are various models for earnings forecast. The forecasts being done by professionals including analysts were more exact than the forecasts made by these models but the precision of the forecast of these people is affected by various factors. Also, forecast precision in various countries can be affected by various factors as tax system or accounting principles. One of the tools of interaction of the managers of the companies with market is presenting the information about company earnings forecast, by which the companies can affect the market behavior. Most of the analysts and investors take their decisions based on existing information and the significance of earnings forecast by managers is more compared to the current earnings and capital book value and the earnings predicted by managers are important criteria in evaluation of the companies and effectiveness on stock price of the companies. It should be expected that stock company managers should be careful in their forecast.

An earnings per share forecast is one of the important principles of investment and in most case is one of the main factors of share selection methods. This issue is important for both the users and provider. The manager attempts to estimate future earnings per share as leading to increasing the trust of the users and considers its user as a criterion for performance evaluation and weak forecast estimation indicates performance weakness. If the management can not cover the fore-

cast earnings, it attempts to manage earnings to fulfill the pre-defined goals (goal earnings) and as earnings management based on accounting values is mostly taken into the attention of the auditors and inspectors of the company, the managers attempt to achieve their goals by changing the real activities of the company.

The management by changing the sale policies (presenting the price discount to the customers-reduction of products price or increasing the credit period) increases the sale and show better earnings and performance. If the mangers present discount in the next periods, the company sale is confronted with some threats and the change in the sale policies is effective on cash flow from operations and earnings of company. In addition, the managers can influence the current period earnings via changing the production policies as overproduction can offset the fixed overhead expenses over large number of units and the cost of the production cost of each unit is less than the normal condition and this increases profit margin. In other words, by this method, a part of fixed overhead expenses of the period in the form of goods inventory at the end of the period is transferred to the next period and the share of sold goods during the period from fixed overhead expenses is relatively lower than normal condition. Thus, if sale income of each unit is fixed, the reduction of cost of each good increases the operating earnings margin. This analysis is true when inventory holding expenses (being created by changing production policy) is less than reduction in production price of sold units in the period.

In another method, the expenses under the control of the management are decreased and increased. The expenses as "Research and Development expenses" and "general, administrative and sale expenses" are classified in the form of discretionary expenses. The companies by altering the discretionary expenses change the expenses and reported earnings in accordance with their goals.

If a manager is deviated from optimized level of real operating activities and is engaged in real activities management-in accordance with his goals- the company is involved in economic outcomes in long-term. The real activities manipulation affects the operating performance of the company indirectly because the manager is inclined to consider current period earnings at the price of losing cash flow. By considering only one period, income or earnings-based accounting ratios can motivate the managers to have a short-term view. For example, current expenses such as Research and Development expenses reducing current earnings and it doesn't lead to generating income to some future periods.

Review of literature

The studies showed that the companies' managers to avoid the loss report and meeting the predictions and expectations of the investors tried to manage or manipulate earnings. Earnings can be managed by two forms: Via manipulation of accounting accruals (accruals earnings management) and via the change in economic events (real earnings management). Accounting values-based earnings management (discretionary accruals) is occurred when management manipulates reported earnings by allowable accounting discretion. Real activities-based earnings management includes the management attempt to change in the reported earnings via altering timing and real business activities. In other words, the companies use earnings real management as an alternative for accounting and accruals items. The unique feature of earnings real management is that via manipulation, real business activities such as research and development expenses, investment, production, sale and assets saving, etc are done. Earnings real management imposes real cots to the company and reduces the company value directly. The real activities manipulation has negative effect on earnings and future cash flow of the company (e.g. Ewert and Wagenhofer., 2005). Some researches as Healy and Wahlen (1999), Dechow and Skinner (2002) and Roychowdhury (2006) referred to some methods as facilitating sale via giving discount, change the table of sending goods, reduction of discretionary expenses such as research and development expenses and overproduction as real earnings management. For example, the managers give price discounts to improve sale by it. The managers consider discount in sale at the end of fiscal year to increase sale. The increase sale volume is eliminated when the company again determines the old prices. Indeed, this transfers future profitability to current period. Thus, future profitability is damaged by sale management.

Real activities manipulation methods as reducing sale price of the products to increase the sale or reduction of discretionary expenses in economic crisis are the optimal methods helping the managers. But if the managers are interested in the mentioned methods widely and based on abnormal features, they are inclined to real earnings management. Although the managers by such activities can achieve their earnings in short-term, they cannot increase the company value in long-term (Bartov *et al.*, 2002). The studies showed that the companies in the three months at the end of year, fulfill earnings goals via real activities manipulation such as price reduction for temporary acceleration of sale. Also, the companies show more reaction

in competitive situations to the earnings management motivations (e.g. Chapman-Craig, 2011).

Thomas and Zhang (2002) presented some evidences about real activities manipulation via overproduction. In other words, managers overproduce for sale and normal level of goods inventory and decrease cost of goods sold and reported earnings is increased. Although this solution improves the profitability margin, the company should pay the expenses of warehousing and holding and normal level of cash flow from operation of the company is reduced (e.g. Thomas and Zhang, 2002). Graham *et al.*, (2005) in an interview with executive managers of 400 USA companies found evidences that the managers to manage reported earnings are inclined to manipulate real activities. For example, 80% of the managers are prepared to reduce the research and development and advertisement expenses to achieve the target earnings. More than half of them are inclined to postpone the new projects to achieve the required earnings even this reduces the company value.

The managers at the beginning of each year predict earnings per share. When they cannot fulfill the presented forecast to the users by their real performance, they attempt to cover their forecast via real activities management (in other words, they reduce their forecast error by it). Thus, the managers to achieve the above goal, manipulate real activities. Some methods as rapid sale via giving discount, considering long credit period for selling the products, reduction of discretionary expenses as research and development and overproduction expenses are real earnings management methods. Based on the mentioned literature, it is expected that there is an association between real earnings management and managers error in forecasting the earnings per share. In Iran, a few studies are done on real activities management. The present study evaluated the relationship between real earnings management and managers error in earnings per share forecast. In this study, compared to the local previous studies, real earnings management criterion was applied instead of accruals-based earnings management to study the managers' error in earnings per share forecast.

Study hypotheses

Based on the review of literature, abnormal cash flow from operations, abnormal production expenses and abnormal discretionary expenses variables were applied as real earnings management criteria. Also, the forecast earnings were compared with real earnings as the managers' error in earnings per share forecast. Thus, the study hypotheses are as following:

Hypothesis 1: There is an association between abnormal cash flow from operations and managers error in earnings per share forecast.

Hypothesis 2: There is an association between abnormal production expense and managers error in earnings per share forecast.

Hypothesis 3: There is an association between abnormal discretionary expenses and managers error in earnings per share forecast.

Methodology

Study population and study sample

The study population of the study was all the companies listed on TSE during 2005-2011. In this study, sampling was done by systematic elimination method. The sample of the study including all the companies listed on TSE met the following inclusion criteria:

1. The fiscal year of the companies leads to the end of Esfand each year.

2. They didn't change their fiscal year during the study period.

3. They are not included in the investment, holding, banks and insurance companies with different structures with other companies.

4. Their financial statement information is completely and continually available since 2005.

Then, the selected sample of 96 companies (672 years-company) was formed.

Study method

The present study is applied in terms of aim. This study is descriptive-correlation design as it investigates the existing condition on one hand and on the other hand determines the relation between the variables by regression analysis. The statistical models in the present study were regression models. In the present study, dependent variable is managers' error in earnings per share forecast and independent variables were abnormal cash flow from operations, abnormal production expenses and abnormal discretionary expenses. Later, computation methods of independent variables are explained. Also, to test the hypotheses, pooled data were used. To determined the estimation method of the models (pooled or panel data), F-Limer test was used and if panel method was applied, Hausman test was used to select fixed effects or random effects. The analysis of the results was done by T-student, F-Fisher and

coefficient of determination tests. The information of the applied variables was collected via annual financial statementsof the companies listed on TSE and by databases "Tadbirpardaz" and "Rahavard Novin". To do the calculations and preparing the data and their analysis, Excel and Eviews software was applied.

The applied variables and model

Measuring abnormal cash flow from operations

In this study, based on Cohen & Zarowin (2010) study, Model (1) was used to estimate the abnormal cash flow from operations as the model residual is considered as abnormal cash flow from operations (ABCASH).

$$\frac{CFO_{it}}{TA_{it-1}} = \alpha 0 \frac{1}{TA_{it-1}} + \alpha 1 \frac{Sales_{it}}{TA_{it-1}} + \alpha 2 \frac{\Delta Sales_{it}}{TA_{it-1}} + \varepsilon_{it} \quad \text{(Model 1)}$$

CFO_{it}: Cash flow from operations of company i at the end of year t

TA_{it-1} : Total assets of company i at the end of year t-1

$Sales_{it}$: Sale of company i during year t

$\Delta Sales_{it}$: The changes of sale of company i at the end of year t equal to sale at year t minus sale in year t-1

ε_{it}: Model residual

Measuring abnormal production expenses

Similar to Cohen & Zarowin (2010) study, abnormal production is estimated by model (2) as the model residual is considered as abnormal production expenses (ABCOST):

$$\frac{PROD_{it}}{TA_{it-1}} = \alpha 0 \frac{1}{TA_{it-1}} + \alpha 1 \frac{Sales_{it}}{TA_{it-1}} + \alpha 2 \frac{\Delta Sales_{it}}{TA_{it-1}} + \alpha 3 \frac{\Delta Sales_{it-1}}{TA_{it-1}} + \delta_{it} \quad \text{(Model 2)}$$

$PROD_{it}$: Production expenses of company i at the end of year t equal to the cost of sold goods plus the changes in goods inventory.

$\Delta Sales_{it-1}$:The changes of sale of company i at the end of year t-1 equal to the difference of the sale between year t-1 and t-2

δ_{it}: Model residual

Measuring abnormal discretionary expenses

According to Cohen & Zarowin (2010) study, abnormal discretionary expense is estimated by model (3) and model residual is considered as abnormal discretionary expense criterion (ABEXP).

$$\frac{DISEXP_{it}}{TA_{it-1}} = \alpha 0 \frac{1}{TA_{it-1}} + \alpha 1 \frac{Sales_{it}}{TA_{it-1}} + \lambda_{it} \quad \text{(Model 3)}$$

$DISEXP_{it}$: Discretionary expenses of company i at the end of year t equal to the administrative, public and sale expenses.

λ_{it}: Model residual

The hypotheses test

To test the study hypotheses, regression model by pooled data was applied:

$$DEPS_{it} = \alpha + \beta X_{it} + \varepsilon_{it} \quad \text{(Model 4)}$$

$DEPS_{it}$:It indicated the difference between real earnings per share with the forecast earnings per share

X_{it}: It indicates real earnings management criteria (abnormal cash flow from operations, abnormal production expense and abnormal discretionary expense)

β: The coefficient of real earnings management criteria for the residual values of models 1-3

Results

Hypothesis test requires normality of dependent variables, consistency of variance and autocorrelation. In case of the lack of consistency, the results are not reliable and this leads to false inferences. After being sure of establishment of regression hypotheses, the study hypotheses are tested.

The study of the first hypothesis

Based on this hypothesis, it is expected that there is an association between abnormal cash flow from operations (as real earnings management) with managers' error in earnings per share forecast. Before estimating each of the models, it is required by F-Limer test and Hausman test (panel data), their estimation method is defined. The results of the above test showed that the applied method to estimate model (1) was panel method (random effects). The results of regression model estimation (1) in Table 1 are as followings:

The estimation results showed that estimation coefficient of abnormal cash flow from operations variable (ABCASH) was negative. As t test probability is less than 5%, this relation is significant statistically. In other words, there is an inverse and significant relation between abnormal cash flow from operations (criterion of real earnings management) and managers' error in earnings per share forecast. The coefficient of determination showed that the independent variables can explain 19% of the changes of dependent variable. As F-statistic is less than 5%, whole model is significant statistically in this case.

Table 1. Estimation of regression model (1)

t-test probability	t-test statistics	Standard error	Estimation coefficient	Variables
0.067	-1.837	2.874	-5.279	C
0.000	-3.549	18.734	-66.479	ABCASH
Durbin-Watson	12.557	statistics F	0.19	Coefficient of determination
1.674	0.000	probability F	0.17	Adjusted coefficient of determination

The study of second hypothesis

Based on this hypothesis, it is expected that there is an association between abnormal production expenses (as real earnings management criterion) with managers' error in earnings per share forecast. Before estimating each of the models, it is required by F-Limer test and Hausman test (panel data), their estimation method is defined. The results of the above test showed that the applied method to estimate model (2) was pooled method (without fixed effects). The results of regression model estimation (2) in Table 2 are as followings:

Table 2. Estimation of regression model (2)

t-test probability	t-test statistics	Standard error	Estimation coefficient	Variables
0.052	-1.949	2.681	-5.224	C
0.075	1.821	8.5925	15.647	ABCOST
Durbin-Watson	3.316	statistics F	0.093	Coefficient of determination
1.588	0.048	probability F	0.081	Adjusted coefficient of determination

The estimation results showed that F statistic probability is less than 5%, thus whole model is significant statistically. In addition, estimation coefficient of abnormal production expense variable (ABCOST) was positive. As t test probability is greater than 5%, this relation is not significant statistically. In other words, there is no significant relation between abnormal production expense (criterion of real earnings management) and managers' error in earnings per share forecast.

The study of third hypothesis

Based on this hypothesis, it is expected that there is an association between abnormal discretionary expenses (as real earnings management criterion) with managers' error in earnings per share forecast. Before estimating each of the models, it is required by F-Limer test and Hausman test (panel data), their estimation method is defined. The results of the above test showed that the applied method to estimate model (3) was panel method (with fixed effects). The results of regression model estimation (3) in Table 3 are as followings:

Table 3. Estimation of regression model (3)

t-test probability	t-test statistics	Standard error	Estimation coefficient	Variables
0.083	-1.735	2.992	-5.190	C
0.009	-2.640	88.557	-233.807	ABEXP
Durbin-Watson	6.980	statistics F	0.088	Coefficient of determination
1.636	0.008	Probability F	0.080	Adjusted coefficient of determination

The estimation results showed that estimation coefficient of abnormal discretionary expense variable (ABEXP) was negative. As t test probability is less than 5%, this relation is significant statistically. In other words, there is an inverse and significant relation between abnormal discretionary expense (criterion of real earnings management) and managers' error in earnings per share forecast. The coefficient of determination showed that the independent variables can explain 08% of the changes of dependent variable. As F-statistic is less than 5%, whole model is significant statistically in this case.

Conclusions

In the present study, the relationship between real earnings management with managers error in earnings per share forecast was investigated. Abnormal cash flow, abnormal production expense and abnormal discretionary expense were applied as real earnings management criteria. Three hypotheses are considered in accordance with the study purpose and 96 companies listed in TSE were studied. The results of the investigation of the first and third hypothesis test showed that there is an inverse and significant association between abnormal cash flow from operations and abnormal discretionary expenses with managers' error in earnings per share forecast. The results of the second hypothesis showed that there is no significant relation between abnormal production expense and managers error in earnings per share forecast. It can be said that to achieve the pre-defined goals (target earnings), the manager manage earnings via some methods as rapid selling via giving discount, changing good delivery table, reduction of discretionary expenses. The results of first and third hypotheses of the present study were consistent with the results of the study of Graham *et al.*, (2005) and Chiman (2011), but results of the study of Thomas and Zhang (2002) and Roychowdhury *et al.*, (2006) were not consistent with the results of the second hypothesis test of the present study.

As a few studies are done in real earnings management in Iran, the following recommendations can be useful for further study:

1. The study of the relationship between real earnings management and error in earnings forecast and accruals for the companies their stock is offered for the first time in TSE.

2. The study of the effect of real earnings management on earnings quality and future stock return of the companies.

3. The study of the relationship between real earnings management and dividend policy.

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